MODULE 2

ENVIRONMENTAL MANAGEMENT AND CLIMATE ISSUES

What is sustainability?

In 1987(p.43), the United Nations Brundtland Commission defined sustainability as:

"meeting the needs of the present without compromising the ability of future generations to meet their own needs."

World leaders gathered in 2015 to adopt the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs).

The 17 SDGs

What is environmental management?

Activities carried out by management firms that affect the environment or may do so are referred to as environmental management.

- In order to create marketable goods, raw materials must be extracted from the environment and processed. Different types of waste enter the environment as a result of production.

- The upkeep of machinery and infrastructure, as well as the packaging and shipping of products, are all activities that surround the manufacturing process and have an effect on the environment. Furthermore, eventually the produced goods will be disposed of and released into the environment as waste.

What is environmental management?
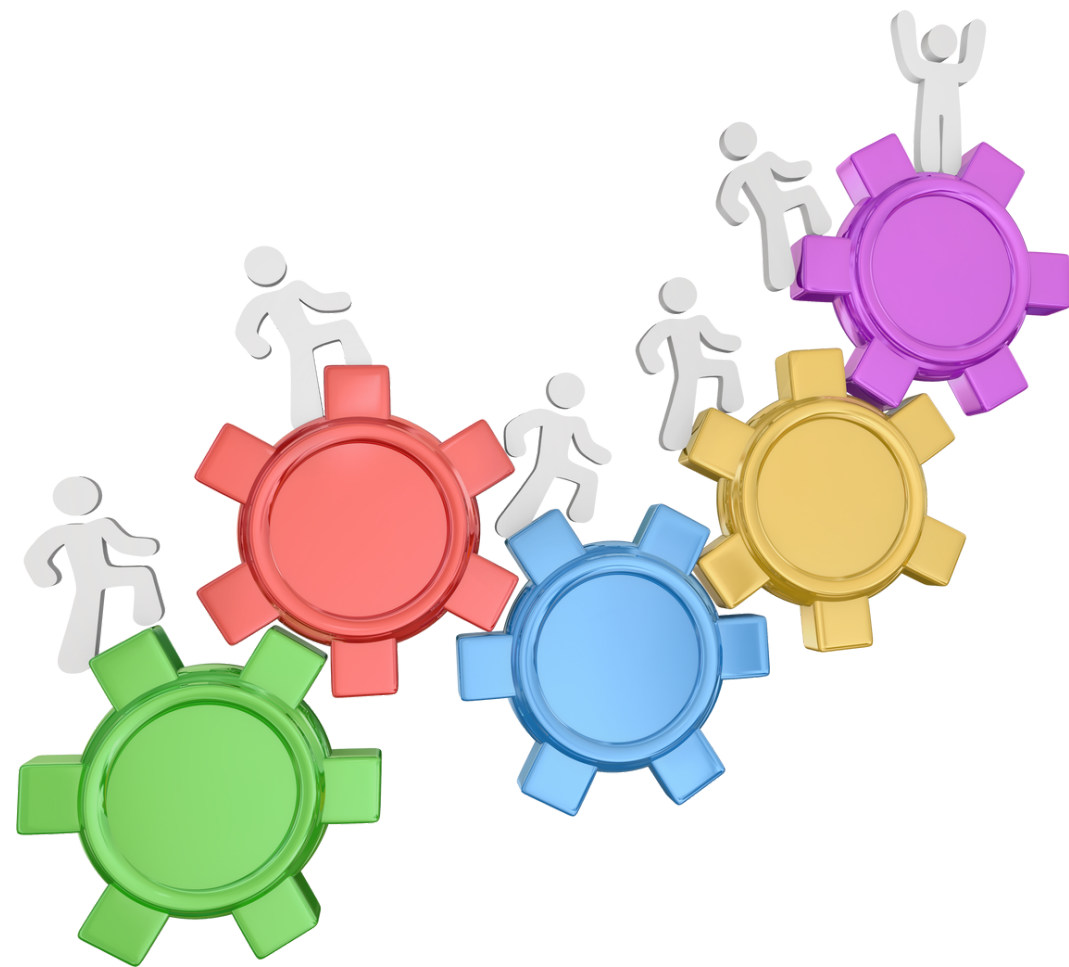
A company can manage its environmental affairs more strategically and methodically by using an environmental management system (EMS), which helps it determine which environmental performance enhancements will have the greatest positive effects on its overall business performance.

Effective environmental management is the goal of EMS, which is composed of several interconnected components.

Impact of an organization's activities on the environment

The issues related to environmental impact in business are diverse and wide-ranging. They include:

Resource depletion

Pollution of air, water and soil

Habitat destruction

Greenhouse gas emissions

Poor waste management

RESOURCE DEPLETITION

Natural resource depletion and habitat loss are frequent outcomes of industrial production's high raw material requirements. Ecosystem disturbance and biodiversity loss are possible outcomes of mining, extraction, and deforestation.

- **Responsible Mining and Extraction:** Implement sustainable mining practices

- **Eco-friendly Technologies:** Invest in research and development of technologies that are environmentally friendly

- **Government Regulations and Policies:** Regulations govern resource extraction, land use, and waste management. In your company you may wish to adhere to your own, stricter standards.

- **Education and Awareness:** Raise awareness about the importance of resource conservation and sustainability through your aims, goals, community work and projects, as well as choosing the most ethical suppliers.

RESOURCE DEPLETITION

- The EU's material footprint was largely unchanged between 2010 and 2020. Non-metallic minerals are consumed at the highest rate among the other material groups; in 2020, they will make up 50% of the footprint.

- After metals (9%), which came in second, and fossil fuels (19%), biomass (23%) was the next largest group.

- Despite making up a sizable portion of the material footprint, non-metallic minerals have less of an effect on the climate and environment than metals and fossil fuels do in relation to their respective material footprint shares.

AIR POLLUTION AND GREENHOSUE GAS EMISSION

Large amounts of pollutants are frequently released into the air during industrial processes. Particulate matter, sulphur dioxide (SO2), nitrogen oxides (NOx), carbon monoxide (CO), and volatile organic compounds (VOCs) are a few examples of these. These pollutants contribute to climate change, cause pollution, and cause respiratory issues.

- Particulate matter with a diameter of 2.5 micrometres or less is referred to as PM2.5. These particles could be harmful to one's health because they are small enough to enter the respiratory system by inhalation.

- Vehicle combustion, industrial facilities, power plants, wildfires, and home heating are among the sources of PM2.5.

- It is essential to monitor and regulate PM2.5 levels in order to uphold air quality regulations and safeguard human health.

AIR POLLUTION AND GREENHOSUE GAS EMISSION

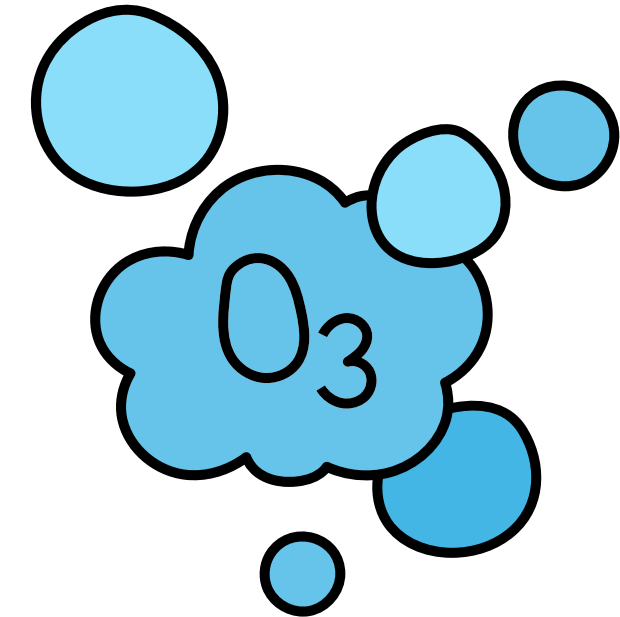## Premature deaths in Europe in 2021
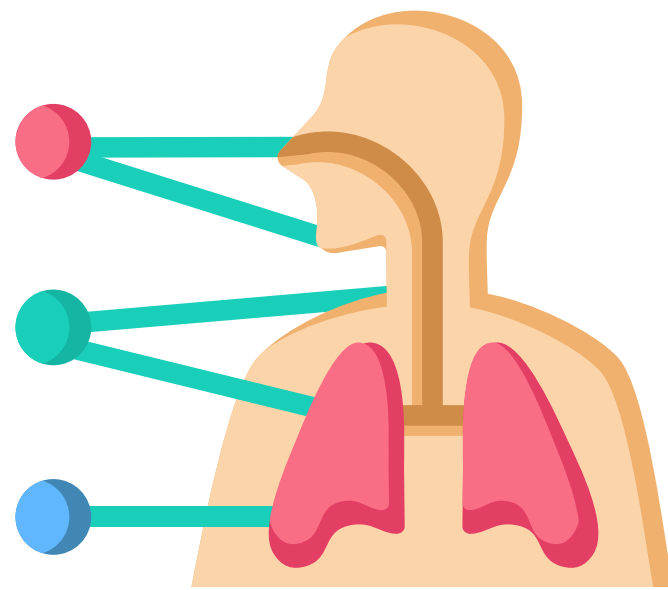
253,000
from chronic exposure to fine
particulate matter

52,000
from chronic nitrogen
dioxide exposure

22,000
from acute ozone
exposure

WATER AND SOIL POLLUTION

- **Wastewater Treatment:** To guarantee that pollutants are removed before being released into local rivers or other bodies of water, upgrade and maintain the sewage treatment system at your production site and nearby areas.

- **Storm/rainwater management strategies:** installing permeable pavement, increasing the number of trees and other vegetation that can hold water, and installing pollutant filters to capture runoff.

- **Reduce the amount of pesticides and fertilisers used in agriculture:** these can contaminate water and soil. Choose organic or green products, or new technologies that lessen your need on chemicals.

WASTE MANAGEMENT

- **Waste Reduction:** Stress the importance of using resources wisely and designing products that will reduce waste output overall.

- **Recycling Programmes:** To separate and gather recyclable materials including paper, cardboard, plastics, glass, and metals, establish extensive recycling programmes.

- **Waste Audits:** Utilise audit results to pinpoint areas where waste can be cut and recycling procedures may be strengthened.

- **Hazardous Waste Management:** Create and follow stringent procedures for getting rid of hazardous garbage.

- **Packaging Requirements:** When procuring products, establish requirements for minimal and sustainable packaging.

EDUCATION OF EMPLOYEES AND SUPPLIERS

1. **A hands-on approach:** volunteering projects
2. **Physical adaptations within facilities:** recycling bins or energy saving practices.
3. **Staff training:** make sure they are fully aware of why certain changes are being made and their impact.
4. **Accreditation or Certification:** this will show the high standards of high products
5. **Environmental Policy or Guidelines:** state your organisation's commitment to reducing its impact on the environment. Make sure all your supplier also follow this.

SUSTAINABILITY AND EMPLOYEES

Source of employee pride: A company's standing and reputation are frequently enhanced by sustainability initiatives, which makes many job seekers feel proud to be employed by a company that is recognised for its accomplishments in this area.

Through employee testimonials and by showcasing how you recognise sustainability accomplishments, you may demonstrate employee pride.

SUSTAINABILITY AND EMPLOYEES

Shows the company cares: Initiatives for sustainability imply that the business actually cares about society's well-being, which means it must treat its employees fairly. Admit openly that you see sustainability as a way to gain a competitive edge through things like lower energy costs, better employee retention, and brand management.

Make sure you connect your sustainable activities to environmental and social values as well.

SUSTAINABILITY AND EMPLOYEES

Helps connect organisational values to personal values: Over thirty years of research demonstrates that a person's decision about a job is largely influenced by how well they believe they match with a company.

Your sustainability efforts will be more genuine if you can relate them to certain company principles.
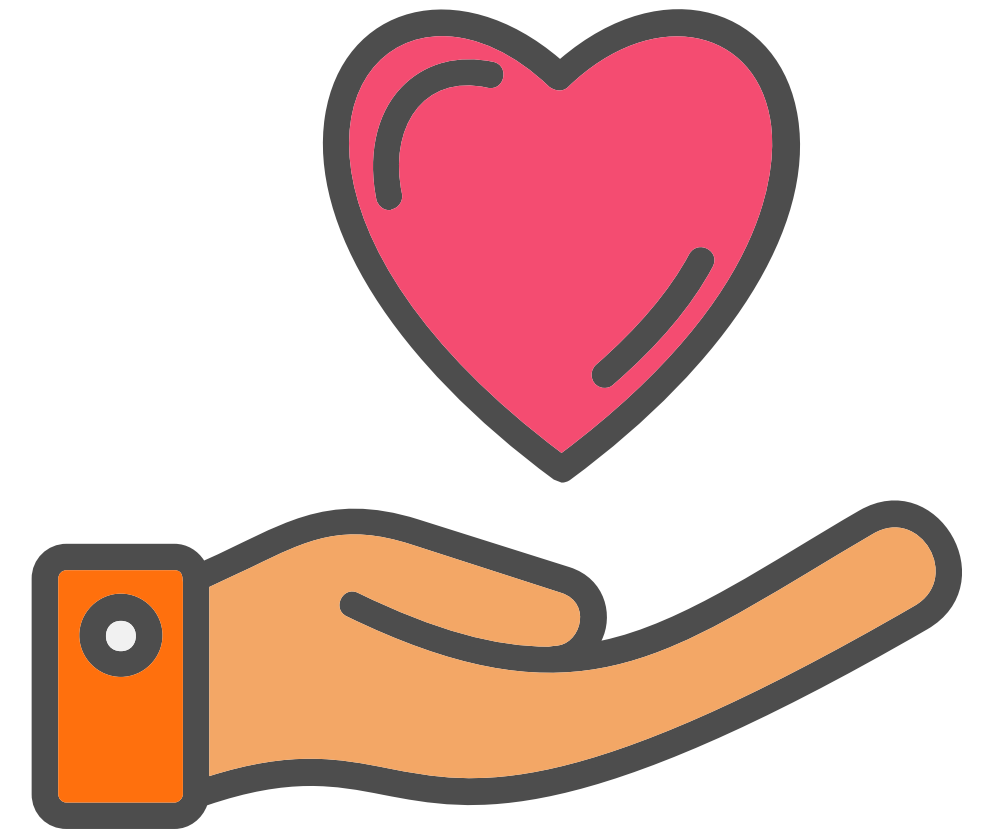
NATURAL CONSEQUENCES OF CLIMATE CHANGE

- **High temperatures**
- **Drought and wildfires**
- **Availability of fresh water**
- **Floods**
- **Sea-level rise and coastal areas**
- **Biodiversity**
- **Soils**
- **Inland water**
- **Marine environment**

SOCIAL CONSEQUENCES OF CLIMATE CHANGE

- **Health:** Increased disease spread, extreme weather-related health issues such as stroke, skin cancer, or asthma, as well as increased food and waterborne diseases.
- **Vulnerable population:** Displacement and migration, which can lead to social unrest, and increase vulnerability to economic or health challenges.
- **Employment:** As societies adapt to a changing climate, new industries related to sustainable practices may emerge. However, this transition may also result in job displacement in traditional sectors, requiring workforce retraining.
- **Education:** Students in vulnerable areas may have limited access to resources, perpetuating social disparities.

CLIMATE CHANGE THREATS TO BUSINESS

- **Infrastructure and buildings:** increased frequency and intensity of extreme weather events can lead to direct physical damage to infrastructure and buildings, as well as accelerate wear and tear on infrastructure, requiring increased maintenance costs.
- **Energy:** disrupted production and distribution of energy resources, with hurricanes or heatwaves damaging energy infrastructure, leading to supply chain interruptions. Businesses heavily invested in fossil fuels may face financial risks.
- **Agriculture and forestry:** includes crop failure and reduced yields, increased spread of pests and diseases, and increased wildfire risks.
- **Insurance:** The changing nature of climate risks introduces uncertainties in risk assessments for insurers, which can mean higher business costs.
- **Tourism:** tourist destinations may be affected extreme weather events, sea-level rise, and changes in ecosystems.

CLIMATE CHANGE: PUBLIC OPINION

- Engagement in CSR activities in crisis periods is well received by society, and hence firms can strengthen their corporate image, influencing stakeholders to adopt a positive attitude towards the firm (Qiu et al., 2021).

- The public's perception of climate change varies significantly amongst countries, according to a national survey conducted in 2018 and published by the European Commission.

- For instance, roughly 76% of people in Sweden think that one of the biggest issues facing the world today is climate change, compared to 22% in Czech Republic.

Source: https://doi.org/10.1111/1467-8551.12665

5 worrying trends for Ireland's environment

85%
Ireland has one of the most fossil fuel dependant economies in Europe with fossil fuels meeting more than 85% of our energy.

€1m
Ireland spent 1 million euro per hour on oil and gas alone in 2022.

© University College Cork

2
Two weather records broken in 2023 in Ireland (warmest June and wettest July on record).

63%
63% of Ireland's bird species are in decline.

1/2
More than half of Ireland's native plants are in decline.

CLIMATE CHANGE: FUTURE IMPACTS

According to climate estimates for the next century, the current trends in climate are expected to persist and even get stronger in the upcoming years. The need for adaptation to the effects of climate change will decrease as we reduce global emissions.

However, some impacts are already unavoidable:
- changes in wind speeds and storm tracks
- increased likelihood of river and coastal flooding
- changes in distribution of plant and animal species
- water stress and impacts on water quality
- negative impacts on human health and wellbeing

CLIMATE CHANGE: FUTURE IMPACTS

The Handbook of Climate Psychology defines **climate anxiety** as a **'heightened emotional, mental or somatic distress in response to dangerous changes in the climate system'.**

Climate anxiety can lead to symptoms such as panic attacks, loss of appetite, irritability, weakness and sleeplessness.

Young people, first responders to climate-related natural disasters, and climate scientists and activists—who are exposed to information about the threat more than others and may thus require psychological support—all experience climate anxiety to a far greater extent than the general public.

CLIMATE CHANGE: FUTURE IMPACTS
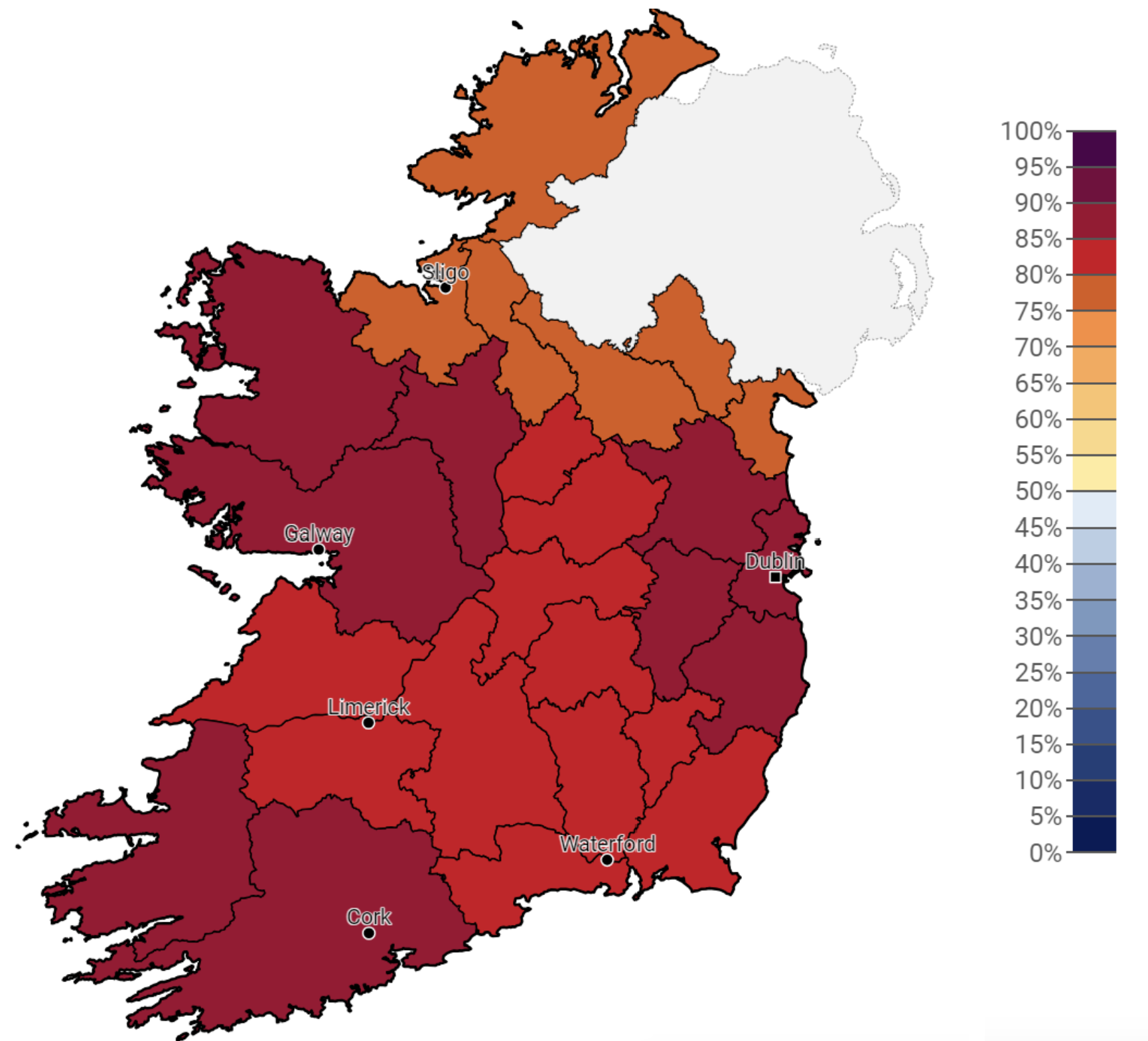
Estimated % of adults who are worried about climate change (national avg. 85%), 2022, Ireland.

RISK ANALYSIS

Risk analysis is a crucial component of many businesses' operations and plays a significant role in decision-making, especially when there is scientific ambiguity.

Although many international agreements and processes are based on environmental risk analysis, there is currently no one internationally approved operational standard for this type of study.

Risk analysis can be defined as a process consisting of three components:
1. **Risk assessment**
2. **Risk management**
3. **Risk communication**

RISK ANALYSIS

- The process of characterising risk involves determining the likelihood of known risks occurring in a qualitative and/or quantitative manner. It also involves assessing the potential negative consequences of a given agent, product, process, or scenario.

- In order to assess environmental risk, all process steps must be identified and evaluated, from a hazard's initial sources, to its eventual effects on a particular system. It is a crucial component in determining whether and how risk needs to be minimised, accepted, or avoided.

- Environmental impact assessment, life-cycle assessment (LCA), or research, are some methods used in risk assessment.

LIFE CYCLE ASSESSMENTS

- The process of assessing a product's environmental consequences over the course of its life in order to reduce liability and increase resource efficiency is known as life-cycle assessment, or LCA.

- It can be used to research how a product affects the environment or how well it fulfils its intended purpose.

- An LCA is sometimes called a "cradle-to-grave" analysis.

LIFE CYCLE ASSESSMENTS

The supply chain is responsible for over 80% of the environmental effect in certain businesses. This implies that your product footprint may be significantly impacted by procurement from several providers.
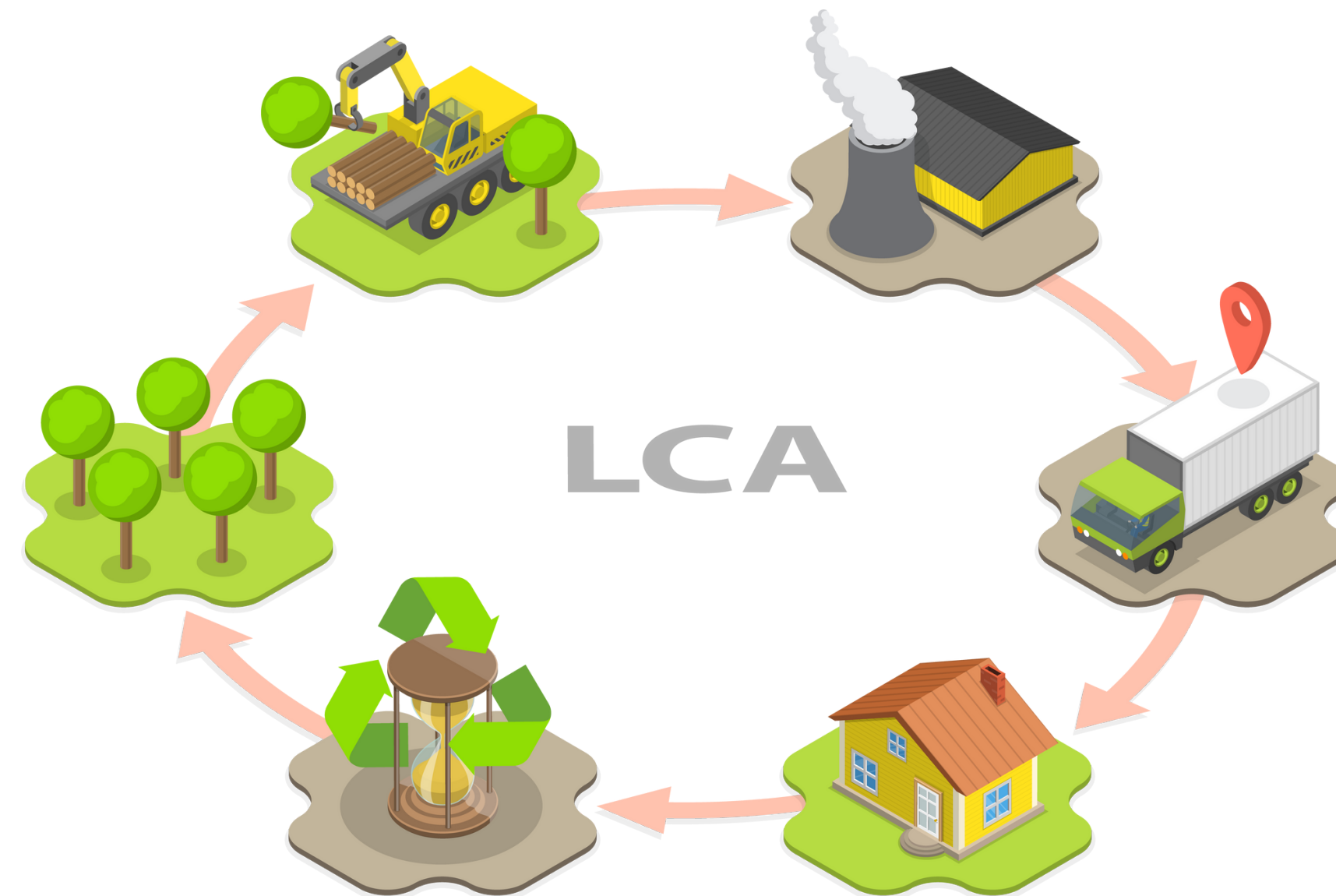
LIFE CYCLE ASSESSMENTS

Key components of LCA are:
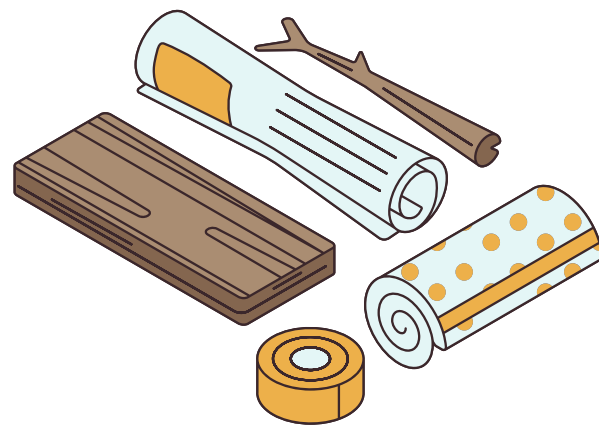
1) identify and quantify the environmental loads involved; e.g. raw materials consumed, waste generated

2) evaluate the potential environmental impacts of these loads

3) assess the options available for reducing these environmental impacts

LIFE CYCLE ASSESSMENTS

Components of Life Cycle Thinking

Extraction and processing of raw materials

Eventual recycling or disposal as waste at the end of its useful life

Manufacturing

Life-cycle Assessment of a product or function

Use, re-use and maintenance of the product

Packaging

Marketing
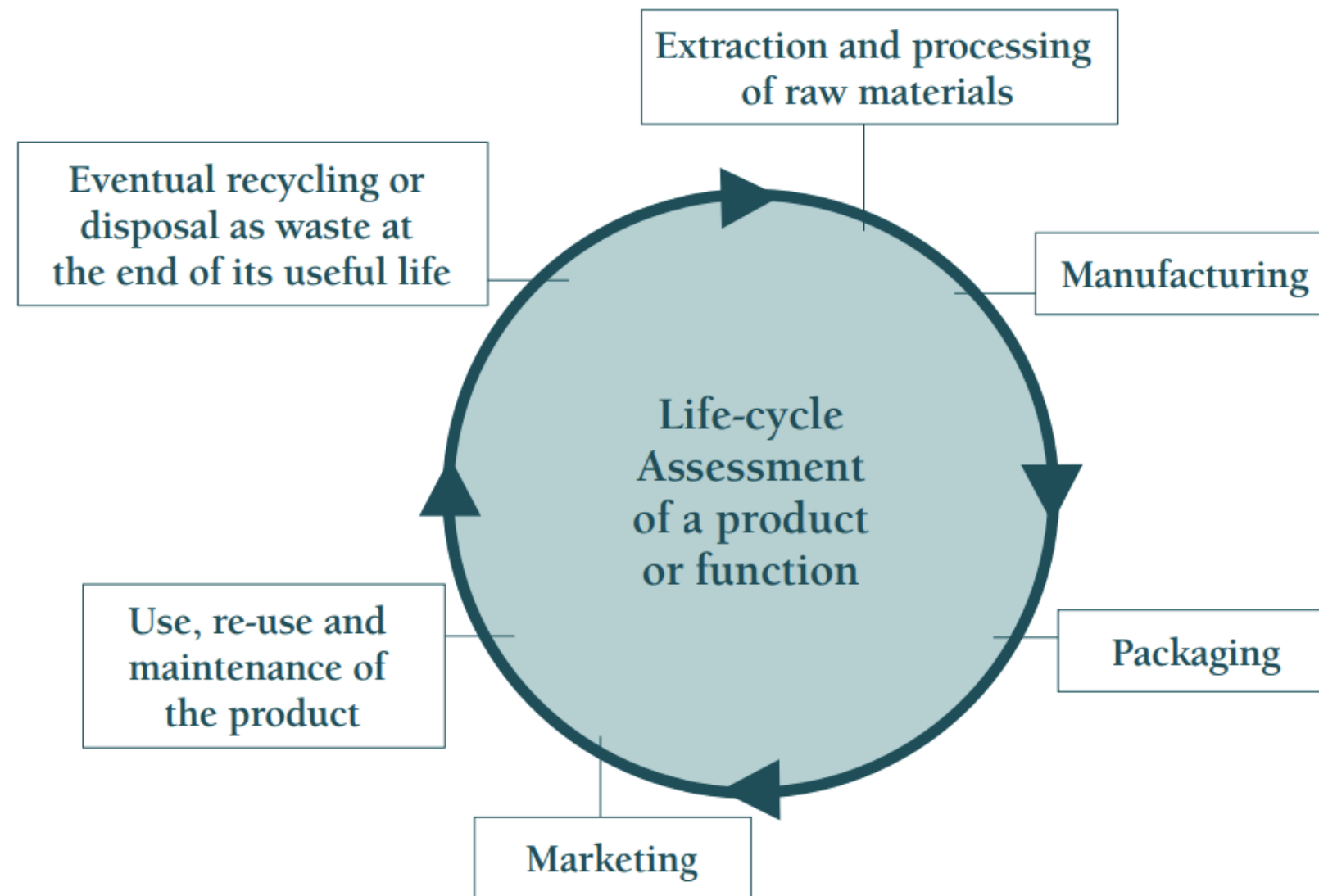
Source: UNEP, Department of Trade, Industry and Economics, Production and Consumption Branch.

The life cycle of a product begins with the extraction of raw materials, continues with manufacturing, transportation, and use, and concludes with waste management, which includes recycling and ultimate disposal. Every phase of the life cycle involves resource use and emissions.

Lifecycle thinking, or the realisation that the environmental effects of a product or service's whole life cycle must be taken into consideration, is the foundation of an LCA.

THE NEED FOR EFFECTIVE ENVIRONMENTAL AND CLIMATE MANAGEMENT STRATEGIES

The goals of EMS:

1. Compliance with environmental requirements
2. Efficient use of resources
3. Waste reduction and minimal pollution
4. Continuous improvement of environmental performance

There are various examples of environmental management systems: the best known and most widely used is ISO 14001.

THE NEED FOR EFFECTIVE ENVIRONMENTAL AND CLIMATE MANAGEMENT STRATEGIES

The key components of environmental management include:

1. **Environmental policy:** statement describing commitment to environmental sustainability.
2. **Planning:** environmental objectives, setting targets and establishing programmes to achieve them.
3. **Implementation:** putting plans into action, allocating resources and assigning responsibilities.
4. **Checking:** monitoring of performance against objectives and targets is critical to ensure the timely implementation of corrective actions.
5. **Management review:** formal review of the EMS supports its continued effectiveness

BENEFITS

- **An EMS can also help address issues outside compliance, such as energy or water management, and can promote stronger operational controls and staff accountability.**
- **Reduced risks:** helps prevent incidents that could harm the environment, and exposure to litigation, fines or sanctions, and reputational damage.
- **Enhanced image:** businesses can attract environmentally conscious customers and build trust in their brand.
- **Increased efficiency:** optimize operations and reduce costs.
- **Continuous improvement:** A systematic approach helps businesses to continuously improve their environmental performance by setting goals, implementing measures, monitoring progress, and making necessary adjustments.

What is ISO 14001?

An organisation can utilise the EMS criteria provided by ISO 14001 to identify, monitor, and improve its environmental performance, satisfy compliance requirements, and accomplish environmental goals.

Any organisation, regardless of size or industry, can apply the standard in full or in part to increase its environmental action.

What is ISO 14001?

- The internationally recognised standard ISO 14001 lays out the specifications for an environmental management system.

- Through more effective resource utilisation and waste reduction, it helps organisations enhance their environmental performance, giving them a competitive edge and the confidence of stakeholders.

Types of ISO 14001 standards

ISO 14090:2019 Adaptation to climate change

ISO 14064-1:2018 Greenhouse gases

ISO 14068-1:2023 Climate change management

Types of ISO 14001 standards

"ISO 14001 provides requirements with guidance for use that relate to environmental management systems. Other standards focus on specific approaches such as audits, communications, labelling and life cycle analysis, as well as environmental challenges such as climate change.

ISO 14001 on environmental management systems (EMS) is the only standard in the ISO 14000 family that can be certified to. It maps out a framework that a company or organization can follow to set up an effective EMS. Designed for any type of organization, regardless of its activity or sector, it can provide assurance to company management and employees as well as external stakeholders that environmental impact is being measured and improved.

There are more than 500,000 certifications to ISO 14001 in over 180 countries around the world"

ISO 14001 Benefits

ISO 14001 helps:

• Demonstrate compliance with current and future statutory and regulatory requirements

• Increase leadership involvement and engagement of employees

• Improve company reputation and the confidence of stakeholders through strategic communication

• Achieve strategic business aims by incorporating environmental issues into business management

• Provide a competitive and financial advantage through improved efficiencies and reduced costs

• Encourage better environmental performance of suppliers by integrating them into the organization's business systems

Should I be ISO 4001 certified?

Organisations can profit much from implementing ISO 14001 even in the absence of recognised certification, as the standard offers numerous advantages.

However, third-party certification is a means to demonstrate to your suppliers, purchasers, customers, and other stakeholders that you have correctly applied the standard. It involves an independent certification authority auditing your activities against the requirements of the standard. Additionally, it might be beneficial for certain organisations to demonstrate how they adhere to contractual or regulatory obligations.

Source: https://www.iso.org/files/live/sites/isoorg/files/store/en/PUB100372.pdf
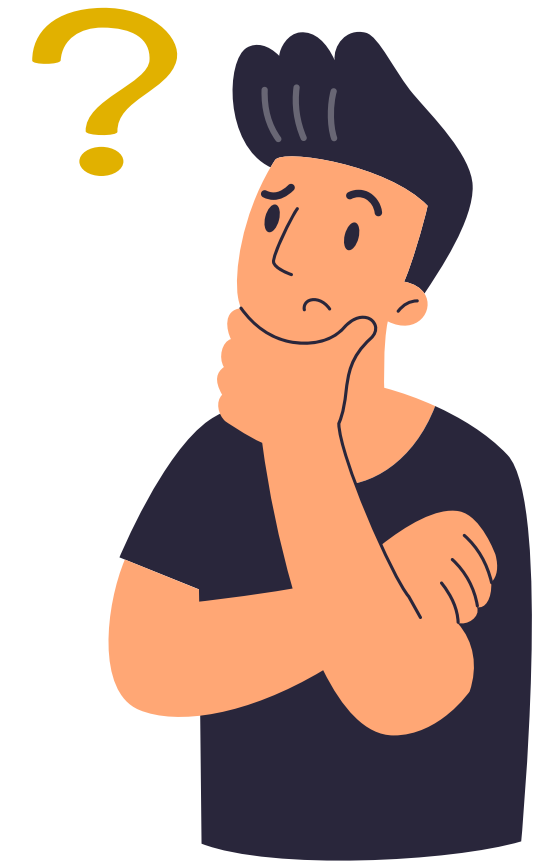
ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

Companies that adopt effective environmental management can increase revenue, save costs, and enhance their reputation.

By putting different ideas into practice, including enhancing production processes, investing in renewable energy, and interacting with stakeholders, businesses may lessen their influence on the environment.

It also assists companies in managing their regulatory and legal responsibilities and adhering to applicable laws.

ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

Multinational corporations are encouraged to enhance their internal environmental management and strengthen their environmental impact contingency planning in order to improve their environmental performance.

Businesses should set up and maintain an environmental management system that is appropriate for their needs. This system should include:
1. Gathering and assessing data about how their operations affect the environment, human health, and safety
2. Establishing quantifiable goals and targets for improved environmental performance, as well as routinely assessing whether these goals are still relevant.
3. Consistently tracking and confirming advancement towards safety, health, and environmental goals.

ENVIRONMENTAL MANAGEMENT SYSTEM (EMS)

The overall goal of environmental management systems is to assist an organisation in achieving its environmental goals by implementing consistent controls over its activities, much as internal accounting controls offer inherent guarantees that financial management systems are operating effectively.

An EMS is not based on the adoption of consistent standards or benchmarks. Instead, every organisation customises the foundation, layout, and content of its EMS to meet its unique needs in terms of capabilities, experience, aspirations, and business objectives.

The EMS Method: Plan–Do–Check–Improve

PLAN
- environmental policy
- environment aspects
- legal requirements
- objectives and targets
- environmental management programme

DO
- structure/responsibility
- training
- environmental management documentation
- document control
- operational control
- emergency preparedness

CHECK/CORRECT
- monitoring/measurement
- non-conformance/corrective/ preventive action
- records
- audits

ACT/IMPROVE
- management review

Continuous improvement

THE EUROPEAN UNION'S ECO-MANAGEMENT AND AUDIT SCHEME (EMAS)

EMAS is a management tool for companies and other organisations operating in the European Union and the European Economic Area, providing an opportunity for companies to receive an external "seal of approval".

A company must meet six requirements:

1. Conduct an environmental review of its activities
2. Establish an environmental management system
3. Carry out an environmental audit; provide an environmental performance statement
4. Verify most of the above with an accredited EMAS verifier
5. Make publicly available the environmental review, EMS, audit procedure and environmental performance statement.

THE EUROPEAN UNION'S ECO-MANAGEMENT AND AUDIT SCHEME (EMAS)

The environmental management systems needed for ISO 14001 are the same as those required by EMAS to establish an EMS.

ISO 14001 does not, however, mandate the publication of an environmental performance statement or the making of information publicly available: two EMAS requirements.

THE EUROPEAN UNION'S ECO-MANAGEMENT AND AUDIT SCHEME (EMAS)

Within the framework of the European Green Deal, EMAS is a crucial tool. Its objective is to lessen the environmental impact of organisations and encourage them to become circular.

EMAS Statistics as per November 2023:

- 4053 Organisations are EMAS-registered
- 12745 Sites are EMAS-registered
- 614 Organisations are EMAS-registered in the waste collection, treatment and disposal sector

An EU revision of the EMAS in 2017 means that it is easy for ISO 14001 certified organisations to upgrade their environmental management system to EMAS.

THE EUROPEAN UNION'S ECO-MANAGEMENT AND AUDIT SCHEME (EMAS)

Businesses employ environmental management techniques for three reasons:

1. **Environmental regulation:** If a corporation complies with the criteria, it will only be deemed "legitimate" and will not be penalised.
2. **Economic interests:** In addition to lessening the adverse effects of operations on the environment, the methods yield financial gains through increased sales, recycling revenue, first-mover advantage, improved social reputation, and higher-quality products.
3. **Competitive advantage:** using resource efficiency, product redesign, clean production technology, production technology optimisation, and cost savings can all result in business possibilities and competitive advantages.

THE ROLE OF BUSINESSES IN TACKLING CLIMATE CHANGE

The Global Compact's strategic goals found in the 2030 Agenda for Sustainable Development and the Paris Agreement on climate change call on companies to set ambitious, measurable targets for sustainability, holding them accountable to meet those milestones.

More than 12,000 companies have signed onto the Global Compact, aligning their operations with an accelerated, equitable transition to clean energy.

IDENTIFICATION OF RISKS RELATED TO ENVIRONMENTAL AND CLIMATE ISSUES

Through macro- and microeconomic transmission channels that result from many forms of climate risk drivers, such as changes in governmental regulations, advancements in technology, or shifts in investor and consumer mood, companies and their finances are exposed to climate change. They might also result in large losses and expenses for banks and the banking system, which affects companies looking to get loans or support from banks.

Risk	Potential effects of climate risk drivers (physical and transition risks)
Credit risk	Credit risk increases if climate risk drivers reduce borrowers' ability to repay and service debt (income effect) or banks' ability to fully recover the value of a loan in the event of default (wealth effect).
Market risk	Reduction in financial asset values, including the potential to trigger large, sudden and negative price adjustments where climate risk is not yet incorporated into prices. Climate risk could also lead to a breakdown in correlations between assets or a change in market liquidity for particular assets, undermining risk management assumptions.
Liquidity risk	Banks' access to stable sources of funding could be reduced as market conditions change. Climate risk drivers may cause banks' counterparties to draw down deposits and credit lines.
Operational risk	Increasing legal and regulatory compliance risk associated with climate-sensitive investments and businesses.
Reputational risk	Increasing reputational risk to banks based on changing market or consumer sentiment.

IDENTIFICATION OF RISKS RELATED TO ENVIRONMENTAL AND CLIMATE ISSUES

- Events and hazards associated with climate change are unpredictable and could exhibit non-linearities, or ongoing fluctuations.

- While some features of physical hazards can be predicted, there is growing uncertainty regarding the location, frequency, and severity of these occurrences.

- Transition risks are those that are associated with uncertainty about the future directions that policy changes, technological advancements, and shifts in consumer perception will help to shape.

IDENTIFICATION OF RISKS RELATED TO ENVIRONMENTAL AND CLIMATE ISSUES

TRANSITION RISKS

1. ***Policy and legal risk*** (e.g., compliance costs, stranded assets, asset depreciation)
2. ***Market and economic risk*** (e.g., company valuation, asset impairment, credit rating)
3. ***Technology risk*** (e.g., write-offs for old systems displaced by new technologies)
4. ***Reputation risk*** (e.g., brand value)

IDENTIFICATION OF RISKS RELATED TO ENVIRONMENTAL AND CLIMATE ISSUES

PHYSICAL RISKS

1. ***Acute physical risk*** (e.g., physical assets, insurance liabilities)
2. ***Chronic physical risk*** (e.g., resource availability, including labor)

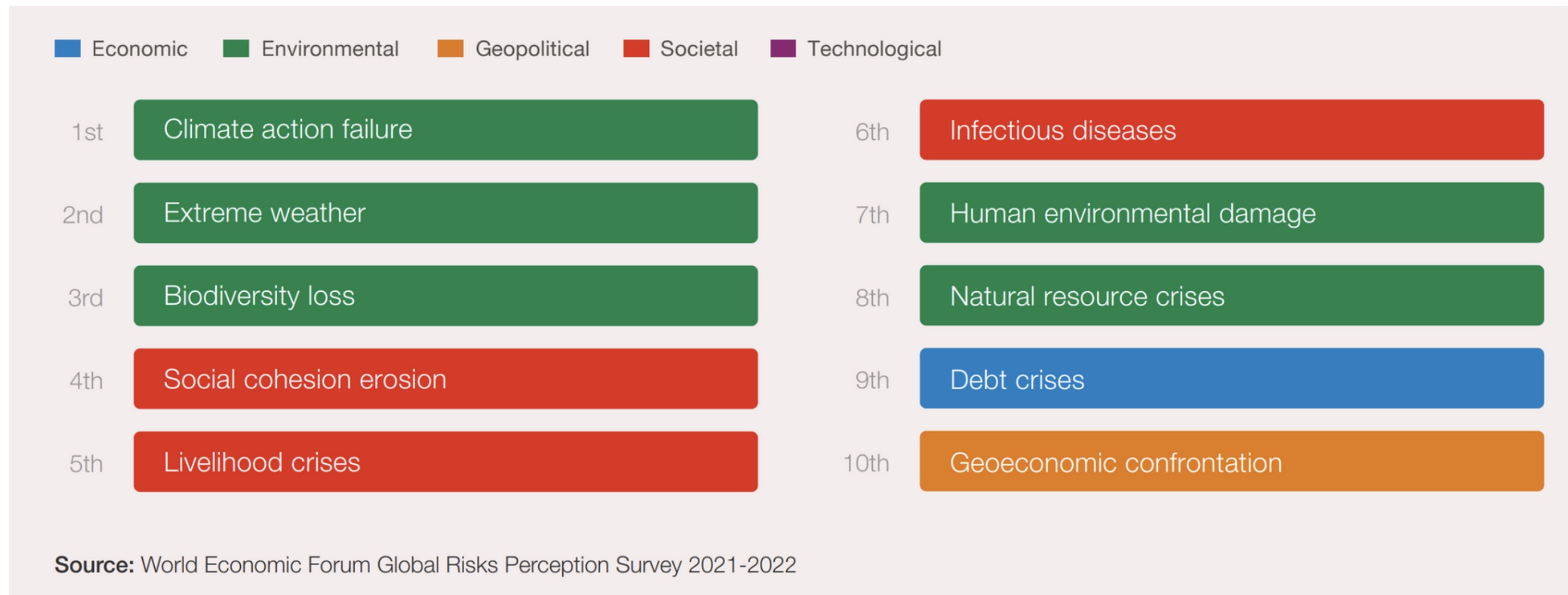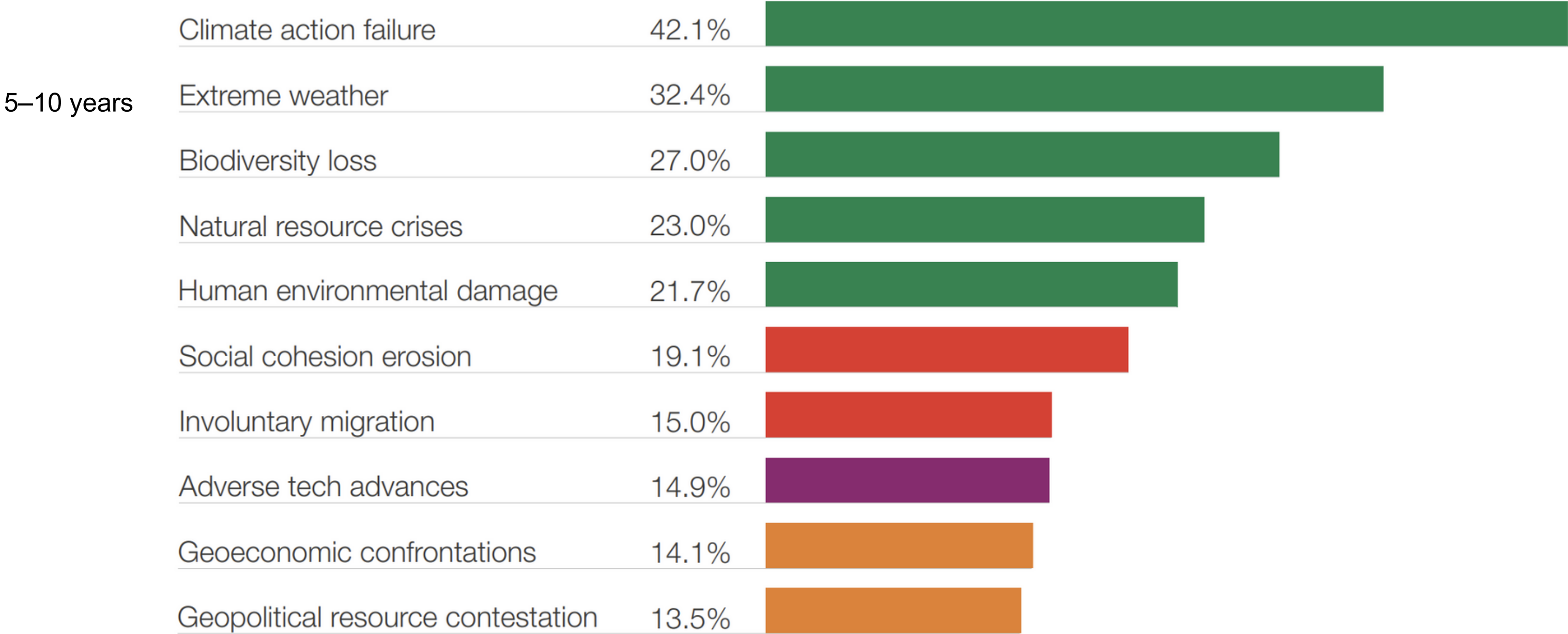# IDENTIFICATION OF OPPORTUNITIES RELATED TO ENVIRONMENTAL AND CLIMATE ISSUES

OPPORTUNITIES

1. *Resource efficiency* (e.g., more efficient modes of transport and water usage)
2. *Energy source incentives* (e.g., lower-emission sources, supportive policies)
3. *Innovative products and services* (e.g., low-emission goods and services)
4. *New market opportunity* (e.g., diversifying through new markets or types of assets)

IDENTIFICATION OF RISKS RELATED TO ENVIRONMENTAL AND CLIMATE ISSUES

The World Economic Fund (WEF) surveyed a range of industries and companies in its Global Risks Report 2022. Below is ranked data showing how organisations responded to the question of *'Identify the most severe risks on a global scale over the next 10 years'*

Economic | Environmental | Geopolitical | Societal | Technological

1st	Climate action failure	6th	Infectious diseases
2nd	Extreme weather	7th	Human environmental damage
3rd	Biodiversity loss	8th	Natural resource crises
4th	Social cohesion erosion	9th	Debt crises
5th	Livelihood crises	10th	Geoeconomic confrontation

Source: World Economic Forum Global Risks Perception Survey 2021-2022

Source: https://www3.weforum.org/docs/WEF_The_Global_Risks_Report_2022.pdf

The World Economic Fund (WEF) surveyed a range of industries and companies in its Global Risks Report 2022. Below is ranked data showing how organisations responded to the question of **'When will risks become a threat to the world'** - in terms of a 5-10 year timeline.

5–10 years

Climate action failure	42.1%	
Extreme weather	32.4%	
Biodiversity loss	27.0%	
Natural resource crises	23.0%	
Human environmental damage	21.7%	
Social cohesion erosion	19.1%	
Involuntary migration	15.0%	
Adverse tech advances	14.9%	
Geoeconomic confrontations	14.1%	
Geopolitical resource contestation	13.5%	

GREEN TECHNOLOGIES AND INNOVATIONS

Smart meters

Smart metres let users cut back on their energy use, which is a passive method of lowering emissions overall even though they don't actually lower emissions.

Bills for individuals can be reduced while businesses have more energy available to supply additional buildings.

GREEN TECHNOLOGIES AND INNOVATIONS

Carbon capture and storage

Beyond human attempts to minimise carbon output and plant more trees, carbon sequestration is one of the most creative ways to eliminate atmospheric carbon dioxide. In the upcoming years, new technologies will be used to actively remove carbon emissions from the environment.
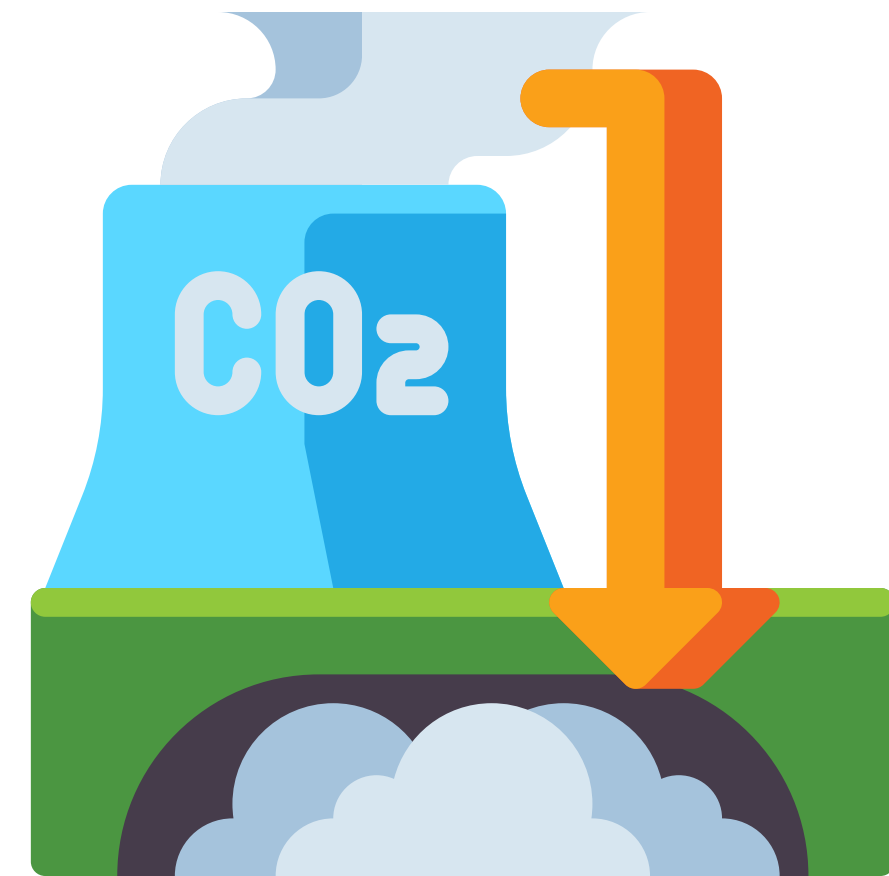
GREEN TECHNOLOGIES AND INNOVATIONS

Electric vehicle propulsion

Electric vehicle (EV) propulsion is one of the most prominent applications of renewable technology. However, a totally electric future cannot yet be supported by the energy networks and charging facilities that exist today. YET.
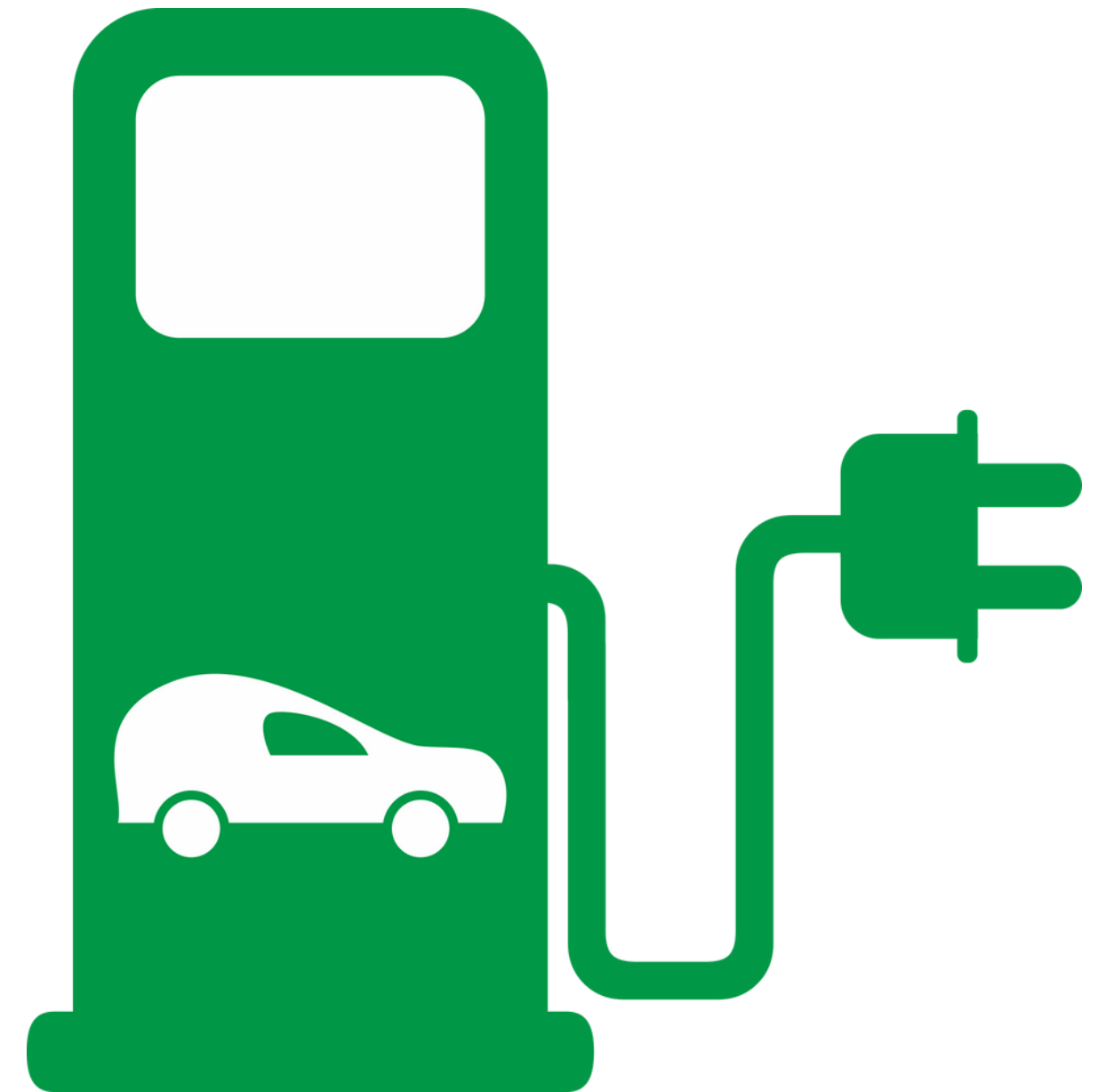
New registrations of electric cars in the EU-27
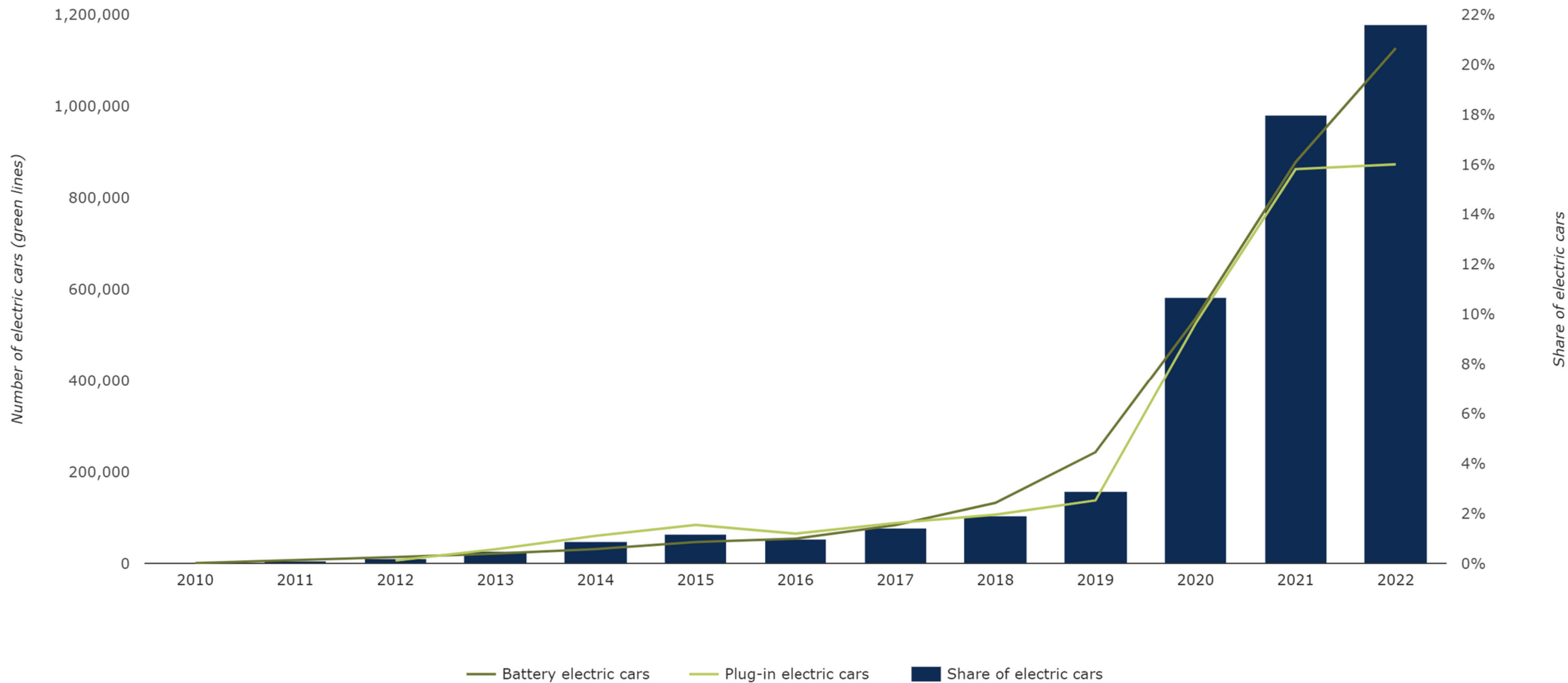
Growth rate of passenger electric vehicles number compared with previous year, 2021
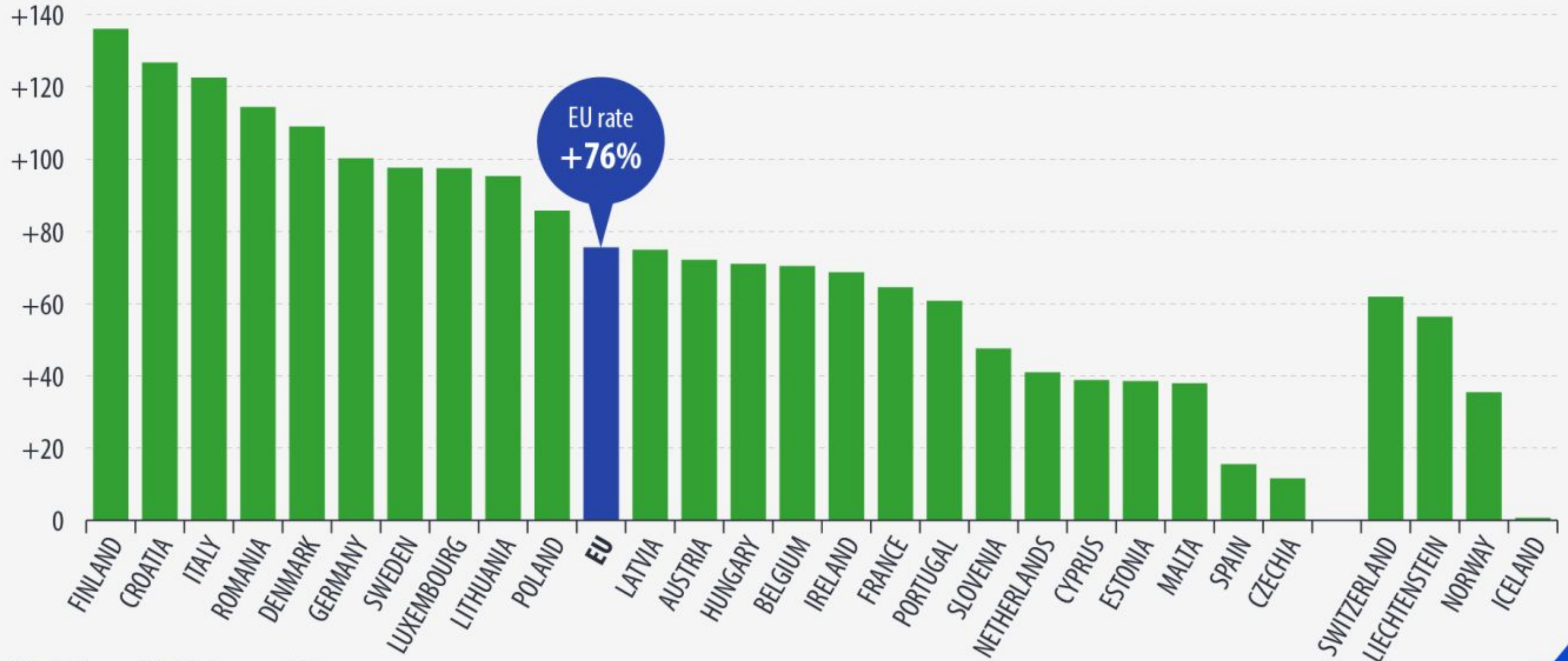
Source: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Electric_vehicles_and_energy_generation_statistics

Electric vehicle charging

An electric vehicle charging was using electricity produced by the following sources (highest shares of each energy source in the EU, 2021 data):

- 11.6 % from solar photovoltaics in Malta
- 48.6 % from wind in Denmark
- 60.1 % from hydro in Austria
- 68.4 % from nuclear in France
- 71.1 % from solid fossil fuels in Poland
- 86.1 % from natural gas in Malta
- 84.9 % from oil and petroleum products in Cyprus

GREEN TECHNOLOGIES AND INNOVATIONS

Green architecture

The built environment is so vast that there are challenges with regard to urban living's sustainability. With cities growing denser and buildings rising in height, creative solutions are needed to ensure that new construction not only complies with climate regulations but also produces energy, sequesters carbon, and blends in visually with the surrounding environment. Moreover, initiatives include planting walls and rooftops to further reduce carbon emissions.
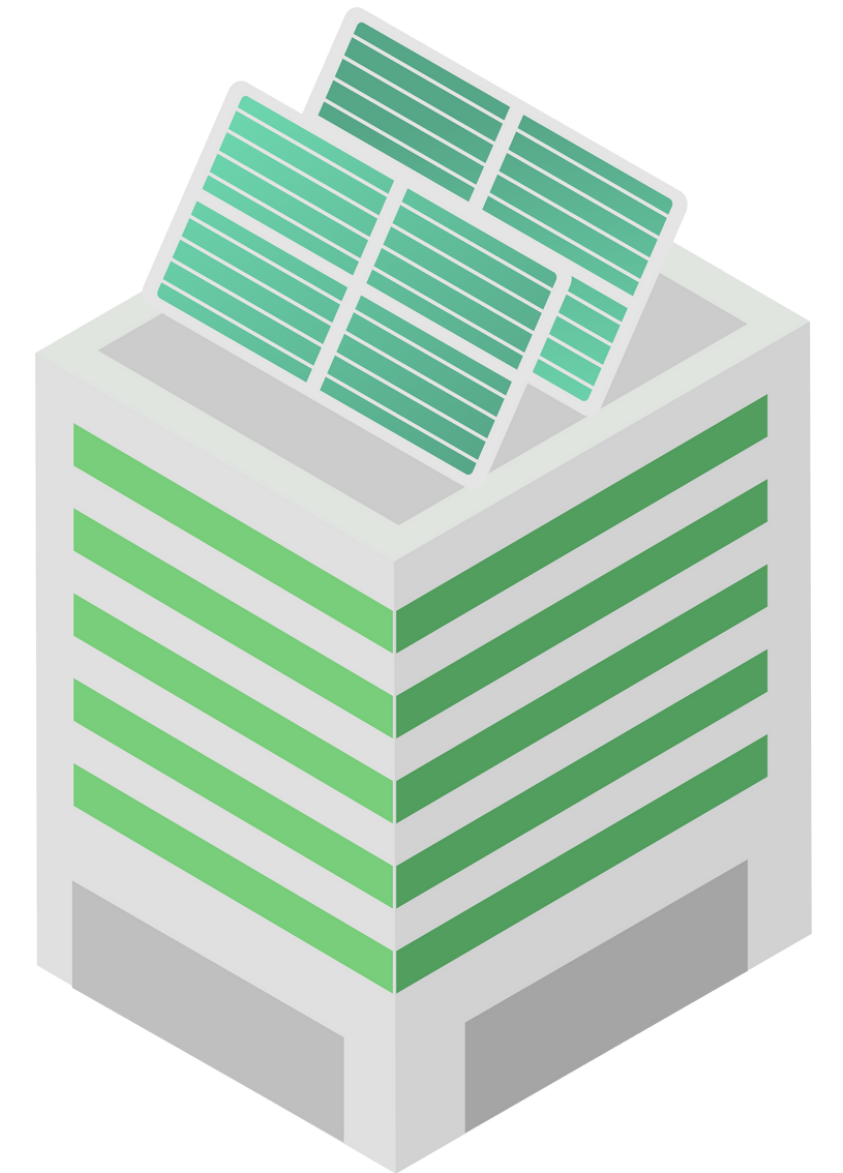
Employee training in the counteracting the negative impact on the environment

- Scholars have noted that environmental education and training can enhance workers' technical knowledge and problem-solving abilities as well as their awareness of and sense of responsibility for environmental issues.

- The concern of employees for sustainability issues can be increased through sustainability education and training. It helps staff members understand how difficult sustainability is in their day-to-day lives.

Employee training in the counteracting the negative impact on the environment

- Education and training are also thought to be the greatest ways to support businesses in promoting sustainable development, as they enhance employees' capacity to deal with sustainability decisions.

- It is possible to mould new perspectives and encourage sustainable conduct in employees through training and education. Employee performance will improve and their commitment to attaining sustainability goals will increase with ongoing training.

Employee training in the counteracting the negative impact on the environment

Sustainable behaviour is positively impacted by employee training, and non-monetary benefits are more beneficial to employees' sustainable behaviour than monetary rewards.

The view of corporate sustainability by employees is positively correlated with investments made in sustainable education, training, and awards. This suggests that businesses should place a high value on these initiatives. By providing incentives, they may also uphold their commitment to the environment and their workforce.

Employee training in the counteracting the negative impact on the environment

Both sustainable training and incentives have a direct impact on employees' sustainable behaviour, but they also raise employees' awareness of corporate sustainability.

Employees' sustainable behaviour is further enhanced by the company's sustainable feeling of responsibility. Therefore, fostering sustainable behaviour among employees can be greatly influenced by how they perceive their establishment of sustainable duty within the company.

Employee training in the counteracting the negative impact on the environment

Programmes for raising environmental awareness and knowledge are crucial because they enable highly qualified workers to engage in ecologically responsible behaviour.

In addition to creating policies and informing staff members of them, organisations also need to reward and offer resources to their workforce.

Additionally, when actively participating in volunteer roles related to the environment, people are more likely to carry out environmental tasks as part of their formal daily routines.

Why is supply chain sustainability important for your business?

The primary rationale is that your supplier or value chain network plays a critical role in your ESG strategy and sustainability goals, independent of your business operations.

Engaging your suppliers is essential to ensuring the success of your ESG strategy, since it enables them to all comply with sustainability standards.

Why is supply chain sustainability important for your business?

The acquisition of information in line with your ESG metrics is the second most crucial factor.

When it comes to monitoring supply chain sustainability standards, most businesses begin with gathering data. This gives you a clear view of how suppliers and contractors are currently performing and enables you to establish baseline metrics or goals for improvement.

In order for you to confidently disclose or report on your ESG progress, these measurements and data also contribute to your overall ESG goals or metrics.

Why is supply chain sustainability important for your business?

The third reason is that stakeholders and investors are worried about how sustainable a supply chain is and want to make sure that there are not any major hazards connected to your value chain that could negatively impact your operations, brand, or finances.

Businesses are therefore under a lot of pressure to support supply chain sustainability, as it could reduce their options within the value chain.

Supply chain management strategy from a sustainability perspective

Real-time Traceability

Real-time traceability enables you to remove any bottle necks so your customers can receive products on time.

Sustainability / ESG Parameters

Prioritize your sustainability parameters, embed them through your supply chain.

Supply chain management strategy from a sustainability perspective

Supplier Collaboration

Easily onboard all supply chain participants such as manufacturers, distributors, suppliers and more.

Supplier Compliance

Ensure your suppliers adhere to your **sustainability standards** so you can manage regulatory and industry compliance.

Source: https://www.thesustainability.io/supply-chain-sustainability-esg-strategy

Supply chain management strategy from a sustainability perspective

Sustainability Reports & Insights

Powerful reports and insights ensures visibility on suppliers' (& participants') progress on sustainability commitments.

Investor Engagement

Showcase your progress on sustainability commitments and ESG improvements to impact (sustainable) investors.

Supply chain management strategy from a sustainability perspective

Supply chains are thought to be responsible for between 50% and 70% of an organization's operating expenses, including sourcing materials, manufacturing, warehousing, and transportation, according to data gathered by EY.

Sustainability initiatives prioritised by companies

Conserve/reduce the water intensity of our operations
8% | 20% | 32% | 40%

Use renewable energy for manufacturing operations
14% | 25% | 25% | 35%

Increase diversity and inclusion of our suppliers
8% | 31% | 38% | 23%

Reduce material waste in production processes
8% | 33% | 40% | 18%

Ensure suppliers are sourcing sustainable materials
8% | 38% | 37% | 18%

Use alternative fuels for vehicle fleets
9% | 40% | 38% | 13%

Address Scope 3 emissions through circular economy strategies
28% | 49% | 15% | 8%

Legend:
- N/A
- We are not making this change and have no plans to
- We have plans to make this change over the next three years
- We are in the process of making this change today
- We made this change in the last two years

Note: Percentages may not total 100 percent due to rounding.

Source: https://www.ey.com/en_uk/supply-chain/supply-chain-sustainability-2022

Sustainability supply chain benefits identified by companies

Improved employee quality of life

49%	20%	31%

Increased customer loyalty

41%	47%	12%

Decreased employee turnover

39%	29%	31%

Safeguarding of corporate brand

39%	27%	33%

Enhanced efficiency and productivity

25%	45%	29%

Increased revenue

25%	63%	12%

Higher profits

24%	59%	18%

Increased share price or other indicators of shareholder value

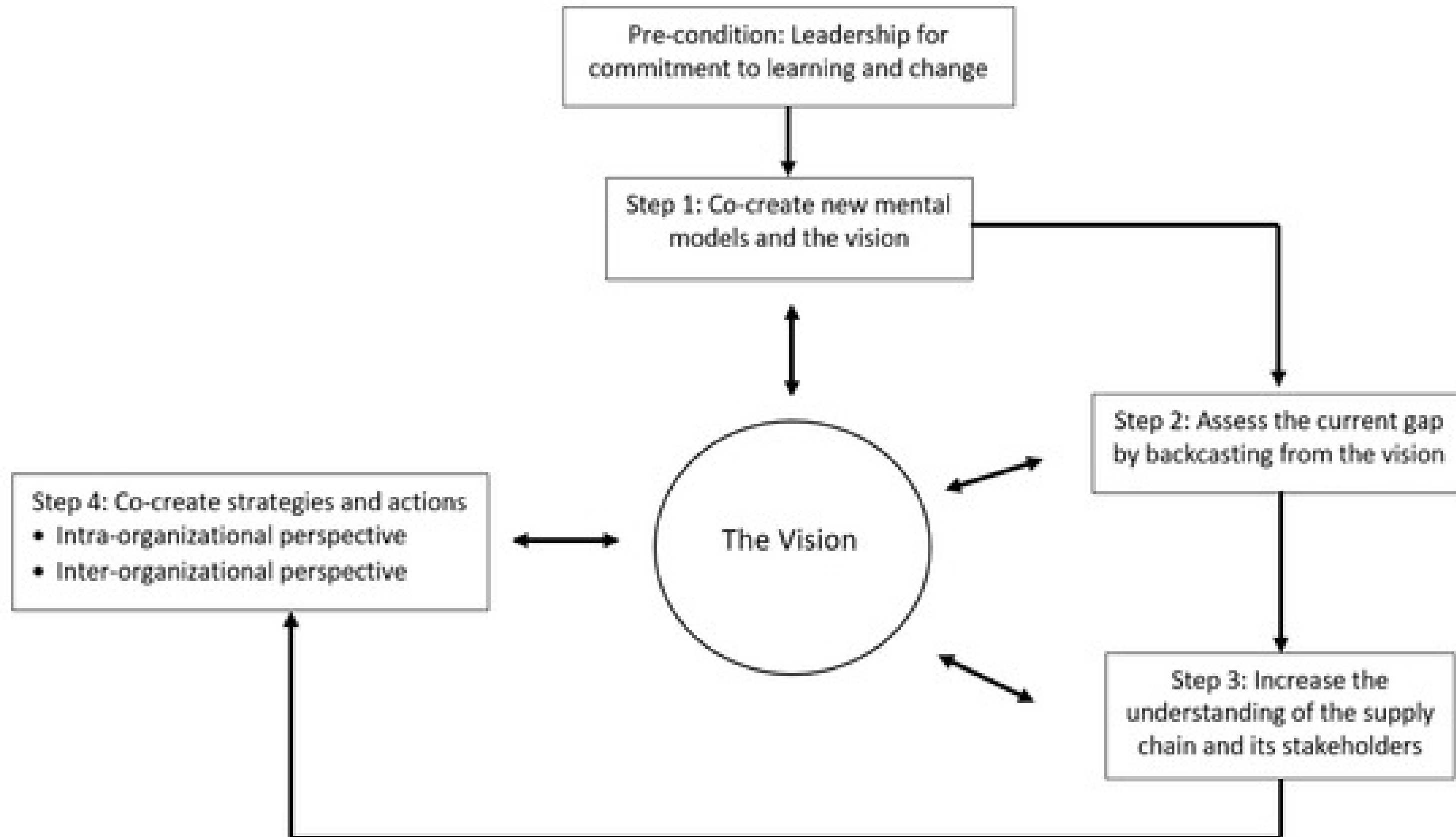| 8%	43%	47%	2%
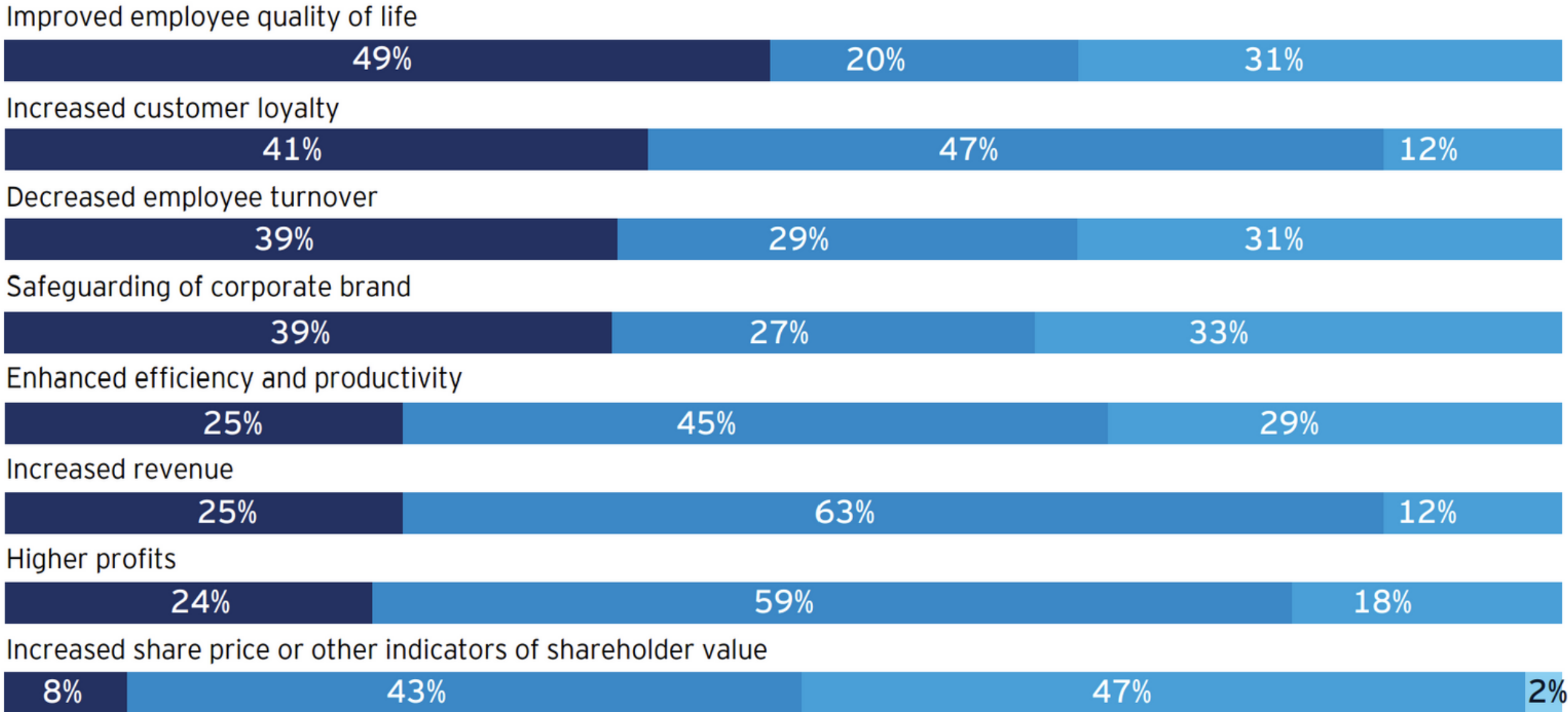
n=51

■ Have already seen   ■ Expect to see in the short term (next 1 to 3 years)

■ Expect to see in the longer term (next 3 to 5 years)   ■ Do not expect to see

Note: Percentages may not total 100 percent due to rounding

Supply chain management: The Steps

Pre-condition: Leadership for commitment to learning and change

Step 1: Co-create new mental models and the vision

Step 2: Assess the current gap by backcasting from the vision

Step 3: Increase the understanding of the supply chain and its stakeholders

Step 4: Co-create strategies and actions
- Intra-organizational perspective
- Inter-organizational perspective

The Vision

END